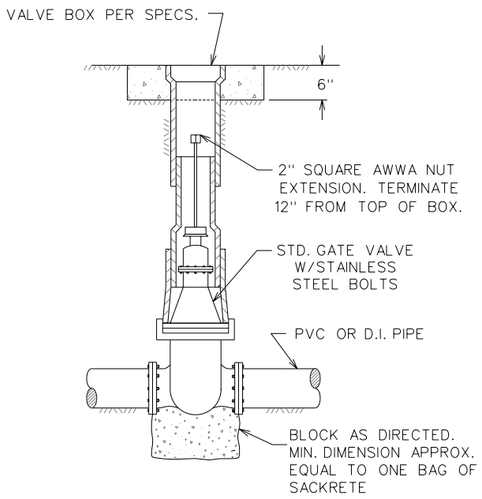
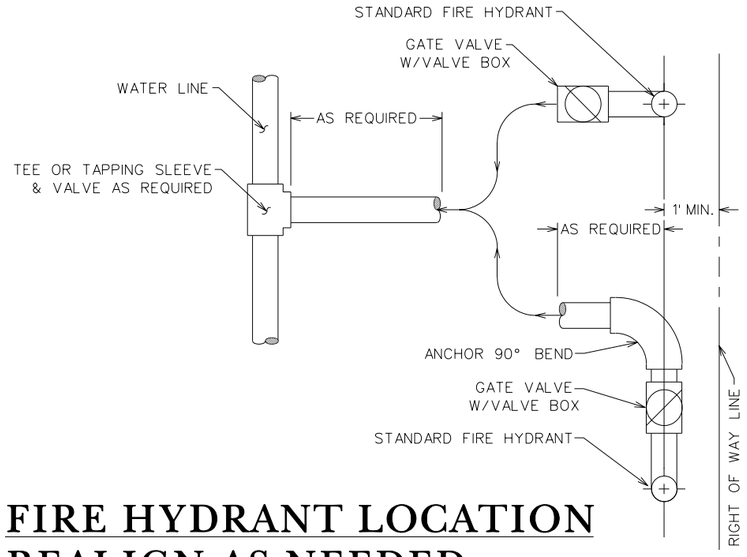
NOTE:
VALVE EXTENSION TO BE USED ONLY WHEN TOP OF GATE VALVE IS DEEPER THAN 5 FEET FROM FINISHED GRADE.

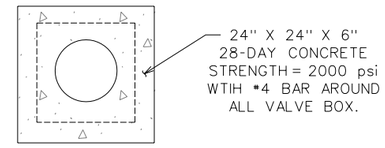


GATE VALVE & BOX

W1-00



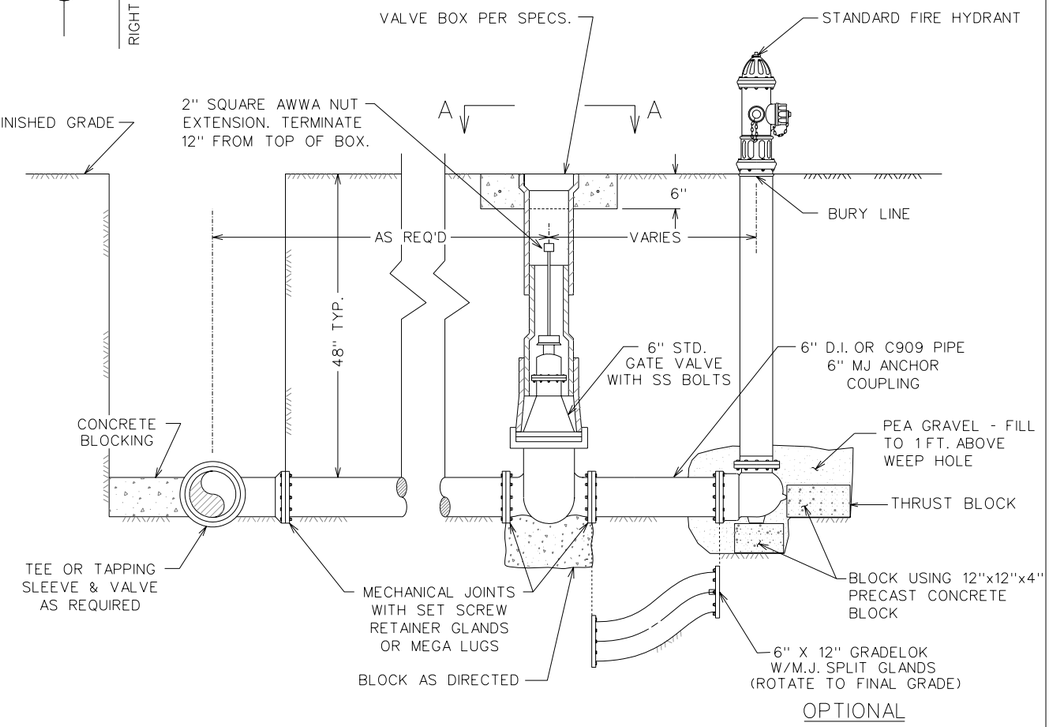
FIRE HYDRANT LOCATION REALIGN AS NEEDED



VIEW A - A

General Notes:

(1) Finely divided earth free of rock, lumps and clods exceeding 6" shall be placed by hand, and compacted around the cast iron pipe to a depth of 12" over the top of the pipe before back fill is begun by any mechanical equipment.
(2) All concrete blocking shall be - 28 day concrete strength = 2000psi.
(3) All thrust blocking shall provide a minimum of 2 square feet of bearing area of concrete on undisturbed soil, or as directed by the engineer.
(4) Water mains will not be fully pressurized until concrete has reached 7 day strength.
(5) All pipe will be laid so as the entire barrel will have full bearing on the fine graded trench bottom. Bell holes shall be cut for each bell and fire hydrant.
(6) All gate valves to be "O" ring type, with non-rising stems; with M. J. ends including all glands, bolts and gaskets; and to open counter-clockwise (left).
(7) All fittings shall be mechanical joints unless otherwise directed.



OPTIONAL

STANDARD FIRE HYDRANT ASSEMBLY

W1-01

REVISIONS:

BRYAN - COLLEGE STATION
STANDARD WATER DETAILS

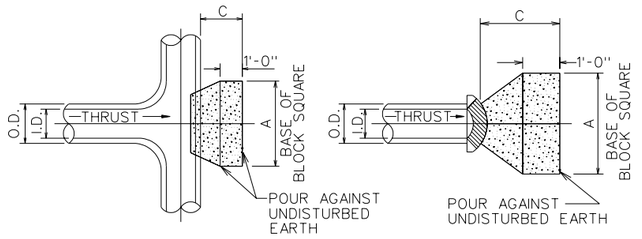
CITY OF COLLEGE STATION

CITY OF BRYAN
The Good Life, Texas Style.™

DRAWN BY: RH
DATE: 01-01-05
SCALE: N T S
APPROVED: W.P.K.
FIGURE:
W1
SHEET 1 OF 4

NOTE: USE POLYETHYLENE WRAP OR EQUAL BETWEEN CONCRETE & PLUG TO PREVENT CONCRETE FROM STICKING TO PLUG.

TEE AND PLUG SCHEDULE				
ID (in)	THRUST (tons)	C (ft)	A (ft)	VOLUME (c.y.)
4,6,8	5.1	1.5	2.5	0.3
10,12	11.3	1.5	3.5	0.6



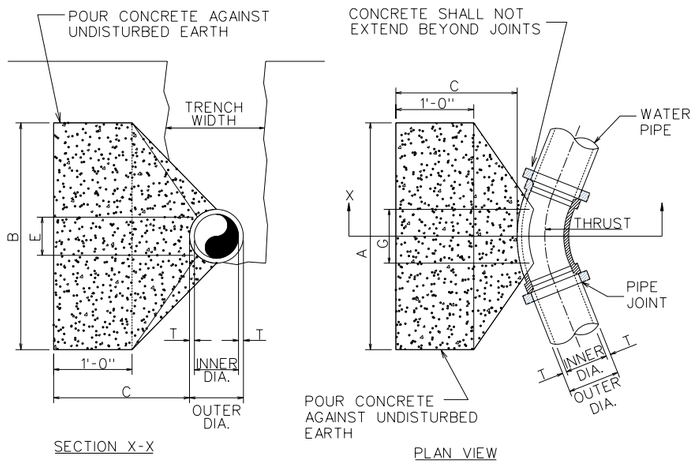
TEE THRUST BLOCK

PLUG THRUST BLOCK

THRUST BLOCK NOTES:

1. ALL CALCULATIONS ARE BASED ON INTERNAL PRESSURE OF 200psi FOR 24" AND SMALLER INNER DIAMETER PIPE.
2. ALL BEARING SURFACES OF THRUST BLOCKS SHALL BE PLACED AGAINST UNDISTURBED EARTH OR ROCK.
3. CONCRETE FOR BLOCKING SHALL BE 2000 psi.
4. DIMENSIONS MAY BE VARIED AS REQUIRED BY FIELD WHERE AND AS DIRECTED BY THE ENGINEER. THE VOLUME OF CONCRETE BLOCKING SHALL NOT BE LESS THAN SHOWN HERE.
5. WATER MAIN WILL NOT BE FILLED UNTIL ALL CONCRETE BLOCKING HAS REACHED 1500psi.

THRUST BLOCK DETAILS



HORIZONTAL THRUST BLOCK SCHEDULE

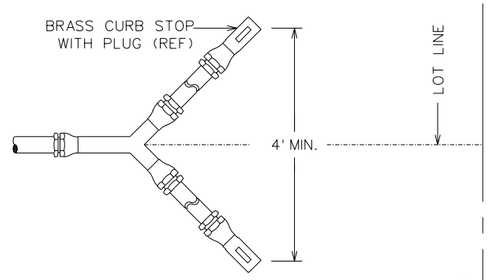
BEND	SIZE	A (ft)	B (ft)	C (ft)	E (ft)	G (ft)	VOLUME (c.y.)
90°	6,8"	5.0	1.5	1.5	0.9	2.7	0.4
	10,12"	6.5	2.5	1.5	1.2	4.0	1.0
45°	6,8"	2.0	2.0	1.5	0.9	1.5	0.2
	10,12"	3.5	2.5	1.5	1.2	2.2	0.5
22.5°	6,8"	1.5	1.5	1.5	0.9	0.8	0.1
	10,12"	2.0	2.5	1.5	1.2	1.1	0.3
11.25°	6,8"	1.0	1.5	1.5	0.9	0.4	0.1
	10,12"	1.5	1.5	1.5	1.2	0.6	0.1

TYPICAL HORIZONTAL THRUST BLOCK

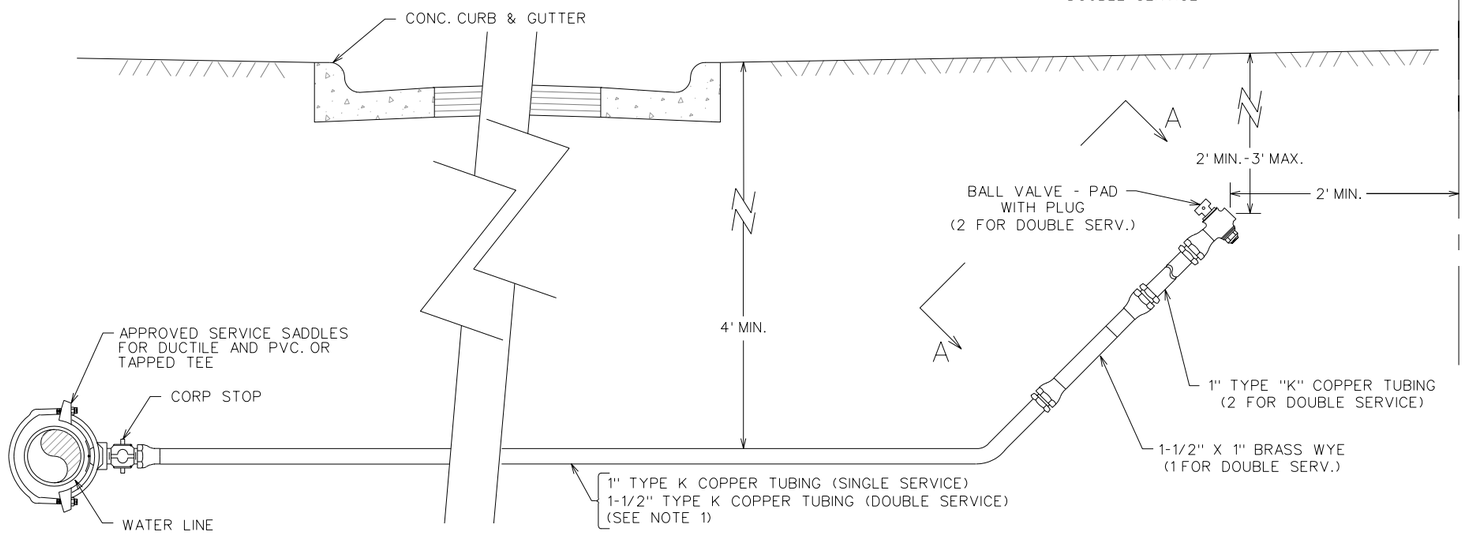
W2-00

NOTES:

1. NO SPLICES IN COPPER TUBING WILL BE ALLOWED BETWEEN THE SERVICE SADDLE AND THE CURB STOP FOR SINGLE SERVICE OR BETWEEN THE SERVICE SADDLE AND THE WYE FOR DOUBLE SERVICE.
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PRESSURE TEST LINES IMMEDIATELY AFTER THE STREET CROSSINGS HAVE BEEN INSTALLED.
3. MARK EACH SERVICE END WITH METAL "T" POST PAINTED BLUE.
4. MATERIAL USED SHALL BE AS SPECIFIED OR AN APPROVED EQUAL.
5. ALL CONNECTIONS TO BE COMPRESSION TYPE.
6. ALL SERVICE WYES & EXTENSIONS ARE TO BE INSTALLED WITH THE MAIN LINE CONSTRUCTION.



VIEW A-A
DOUBLE SERVICE



WATER CROSSING

W2-01

REVISIONS:

BRYAN - COLLEGE STATION STANDARD WATER DETAILS

CITY OF COLLEGE STATION

CITY OF BRYAN
The Good Life, Texas Style.™

DRAWN BY: RJ
DATE: 01-01-05
SCALE: N T S
APPROVED: W.P.K.
FIGURE:
W2
SHEET 2 OF 4

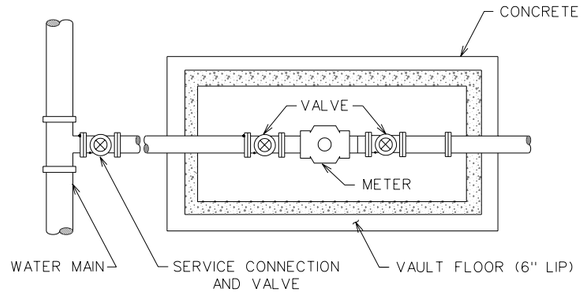
SPECIAL CONDITIONS

1. METER REGISTER SHALL BE NO DEEPER THAN 12 INCHES BELOW FINISHED GRADE.
2. FLOOR OF VAULT WILL BE A MINIMUM OF 6 INCHES FROM BOTTOM OF ANY PIPING APPARATUS OR METER WITHIN THE VAULT.
3. REINFORCED CONCRETE VAULT BASE (FLOOR) SHALL BE CONSTRUCTED USING A STANDARD FIVE SACK CONCRETE MIX AND REINFORCING COMPRISED OF #3 REBAR ON 12 INCH CENTERS WITH A MINIMUM BASE THICKNESS OF 6 INCHES.
4. SET SCREW RETAINER GLANDS SHALL BE INSTALLED AT EACH FITTING ON MECHANICAL JOINT PIPE.
5. VALVES SHALL MEET THE CITY SPECIFICATIONS FOR VALVES.
6. THERE SHALL BE NO PIPING UNDER THE FLOOR OF THE VAULT.

APPROVED 3" OR LARGER COMPOUND METERS, VAULTS & MATERIALS

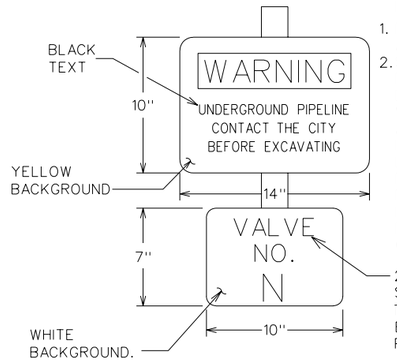
APPROVED METERS - SENSUS SRH (U. S. GALLONS)
APPROVED VAULTS - PARK DMC-BR PRE-CAST CONCRETE VAULT WITH ADEQUATE ACCESS AND VAULT DIMENSIONS FOR METER SELECTED
APPROVED MATERIALS - DUCTILE IRON PIPE WITH MECHANICAL JOINT. SET SCREW RETAINER GLANDS WILL BE USED ON ALL M. J. FITTINGS.

ANY DEVIATIONS FROM THE ABOVE SPECIAL CONDITIONS OR APPROVED METERS, VAULTS OR MATERIALS MUST BE SUBMITTED TO THE DIVISION MANAGER, WATER SERVICES, 72 HOURS PRIOR TO ANTICIPATED DEVIATION.

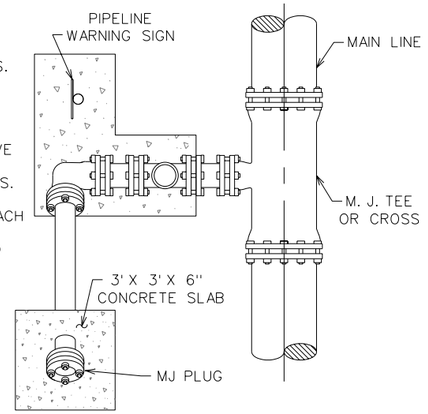


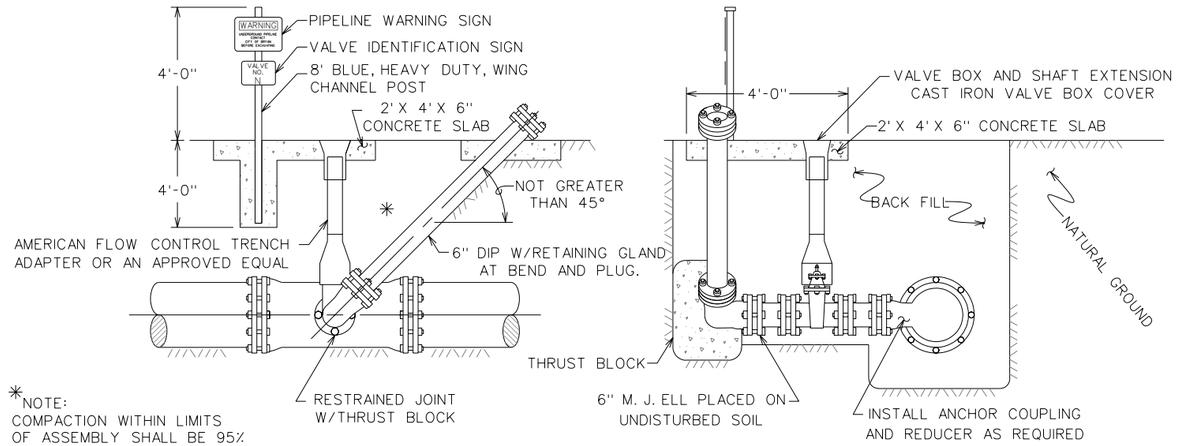
METER VAULT ASSEMBLY

W3-00



NOTES:
1. FURNISH AS SHOWN ON PLANS AND ON ALL VALVE SIGN POSTS.
2. SIGNS TO BE CONSTRUCTED FROM 20 GA. STEEL BAKED ON ENAMEL FINISH. FURNISH ONE WARNING AND ONE VALVE SIGN AND ONE POST FOR EACH VALVE INSTALLED AND AT OTHER LOCATIONS AS SHOWN ON PLANS. FURNISH SAME NUMBER OF REPLACEMENT SIGNS AS FOR EACH INSTALLED (OMITTING VALVE NUMBER ON VALVE SIGN BLANK) (NOT A SEPARATE PAY ITEM)



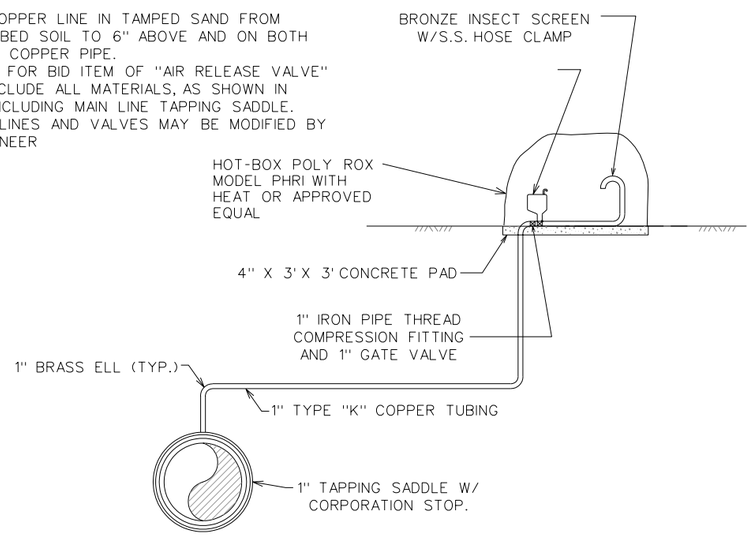


*NOTE:
COMPACTION WITHIN LIMITS OF ASSEMBLY SHALL BE 95% STANDARD DENSITY PER ASTM D698

IN-LINE BLOW OFF ASSEMBLY

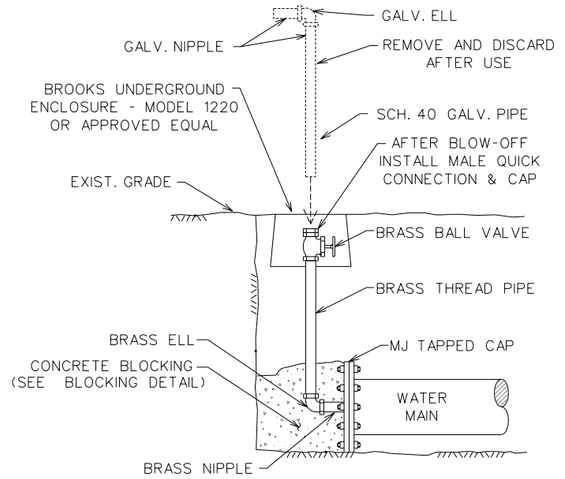
W3-01

NOTE:
1. EMBED COPPER LINE IN TAMPED SAND FROM UNDISTURBED SOIL TO 6" ABOVE AND ON BOTH SIDES OF COPPER PIPE.
2. PAYMENT FOR BID ITEM OF "AIR RELEASE VALVE" SHALL INCLUDE ALL MATERIALS, AS SHOWN IN DETAIL, INCLUDING MAIN LINE TAPPING SADDLE.
3. SIZE OF LINES AND VALVES MAY BE MODIFIED BY THE ENGINEER



AIR RELEASE VALVE & VACUUM CHECK VALVE

W3-02



BLOW-OFF RISER

W3-03

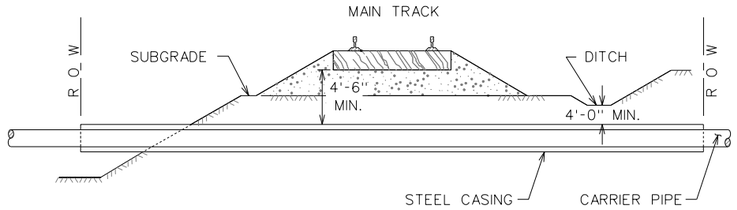
REVISIONS:

BRYAN - COLLEGE STATION
STANDARD WATER DETAILS

CITY OF COLLEGE STATION

CITY OF BRYAN
The Good Life, Texas Style.™

DRAWN BY: RKT
DATE: 01-01-05
SCALE: N T S
APPROVED: W.P.K.
FIGURE:
W3
SHEET 3 OF 4



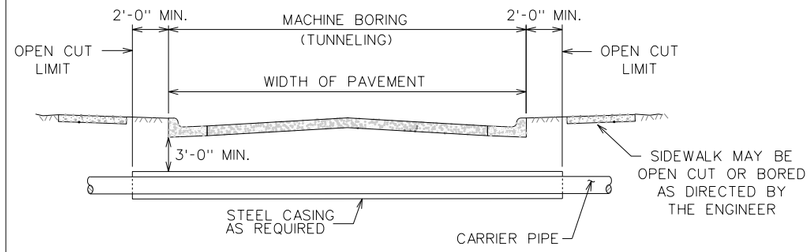
MACHINE BORING (TUNNELING IN EMBANKMENT)

MACHINE BORING (TUNNELING IN CUT)

NOTE:
1. FOR MORE INFORMATION ON WATER AND SEWER LINE CROSSING SEE CITY STANDARD SPECIFICATION FOR WATER AND SEWER LINE CONSTRUCTION.
2. STEEL CASING SHALL BE AS SPECIFIED IN THE TECHNICAL SPECIFICATIONS.
3. DRY BORING IS REQUIRED.

TYPICAL RAILROAD CROSSING

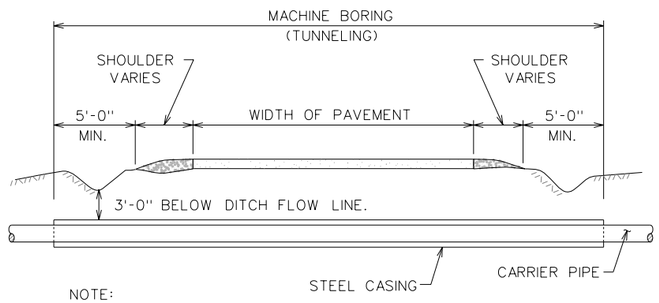
W4-00



NOTE:
1. FOR MORE INFORMATION ON WATER AND SEWER LINE CROSSING SEE CITY STANDARD SPECIFICATION FOR WATER AND SEWER LINE CONSTRUCTION.
2. STEEL CASING SHALL BE AS SPECIFIED IN THE TECHNICAL SPECIFICATIONS.
3. DRY BORING PREFERRED, WET BORING ALLOWED ONLY WHEN APPROVED BY THE CITY ENGINEER.

TYPICAL CITY STREET CROSSING

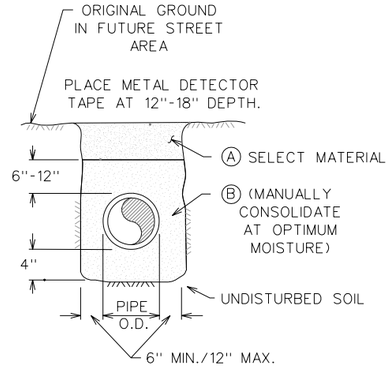
W4-01



NOTE:
1. FOR MORE INFORMATION ON WATER AND SEWER LINE CROSSING SEE CITY STANDARD SPECIFICATION FOR WATER AND SEWER LINE CONSTRUCTION.
2. STEEL CASING SHALL BE AS SPECIFIED IN THE TECHNICAL SPECIFICATIONS.
3. DRY BORING IS REQUIRED.

TYPICAL STATE HIGHWAY OR MAIN THOROUGHFARE CROSSING

W4-02



Ⓐ SELECT MATERIAL
MATERIAL EXCAVATED FROM THE DITCH, (WHICH IS FREE OF ROCKS, LUMPS, CLODS, OR DEBRIS LARGER THAN TWO (2) INCHES IN THE LARGEST DIMENSION), COMPACTED TO A MINIMUM OF 90% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D698 (STANDARD) AT A MOISTURE CONTENT WITHIN OPTIMUM TO +4% OF OPTIMUM UNDER NON-STRUCTURAL AREAS (ie...YARDS, PASTURES, EASEMENTS) AND TO A MINIMUM OF 98% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D698 (STANDARD) AT A MOISTURE CONTENT WITHIN OPTIMUM TO +4% OF OPTIMUM UNDER FUTURE STREET AREAS.

Ⓑ GRANULAR MATERIAL
MATERIAL SHALL BE BANK RUN RIVER SAND WHICH IS FREE OF DETRIMENTAL QUANTITIES OF CLAY, DEBRIS, OR ORGANIC MATERIAL AND WHICH, WHEN TESTED BY STANDARD LABORATORY METHODS, MEET THE FOLLOWING REQUIREMENTS:

MAXIMUM LIQUID LIMIT	45
MAXIMUM PLASTICITY INDEX	15
MAXIMUM PERCENT PASSING NO. 200 SIEVE	35
MINIMUM PERCENT PASSING 3/4" SIEVE	100

THE MATERIAL SHALL BE FREE FLOWING AND WHEN WET, SHALL NOT ADHERE TO FORM A BALL WHEN PRESSED IN THE HAND.

NOTES:
1. *FOR BEDDING AND TRENCHING WITHIN EXISTING STREET/ STRUCTURAL AREAS SEE DETAILS FOR OPEN CUT STREETS.*
2. All bedding & installation of PVC pipe shall be in accordance to ANSI/AWWA Standards for PVC Pipe.
3. All bedding & installation of Ductile Iron pipe shall be in accordance to ANSI/AWWA C150/A21.50.
4. Compaction shall be attained by mechanical tamping.
5. Relative compaction shall be tested in the presence of the City Engineer.
6. Dust resulting from the Contractor's performance of the work, either inside or outside the right of way, shall be controlled by the Contractor.
7. All trenches shall be back filled and temporary paving or plating placed at the end of each working day.
8. See "Open Cut Details" ST4-00, ST4-02 & ST4-02.

BEDDING AND TRENCH FOR DI PIPE & PVC PIPE WITHIN NON-STRUCTURAL OR FUTURE STREET AREAS

W4-03

GENERAL NOTES:

ALL AREAS WHERE EXISTING VEGETATION AND GRASS COVER HAVE BEEN BARED BY CONSTRUCTION SHALL BE ADEQUATELY BLOCK SODDED OR HYDROMULCHED AND WATERED UNTIL GROWTH IS ESTABLISHED. IN DEVELOPED AREAS WHERE GRASS IS PRESENT, BLOCK SOD WILL BE REQUIRED. BARED AREAS SHALL BE SEEDED OR SODDED WITHIN 14 CALENDAR DAYS OF LAST DISTURBANCE.

APPROVED EROSION CONTROL MEASURES MUST BE INSTALLED DURING THE ENTIRE TIME THAT EARTH HAS BEEN BARED BY CONSTRUCTION AND SHALL STAY IN PLACE UNTIL ACCEPTABLE VEGETATIVE GROWTH IS ESTABLISHED AFTER CONSTRUCTION IS COMPLETE AND THEN REMOVED BY CONTRACTOR.

ALL EROSION CONTROL MEASURES SHOULD BE CLEANED OF SILT AFTER EVERY RAIN.

ESTABLISHMENT OF VEGETATION MAY BE A WARRANTY ITEM.

REVISIONS:

BRYAN - COLLEGE STATION STANDARD WATER DETAILS

CITY OF COLLEGE STATION

CITY OF BRYAN
The Good Life, Texas Style.™

DRAWN BY: RH
DATE: 01-01-05
SCALE: N T S
APPROVED: W.P.K.
FIGURE:
W4
SHEET 4 OF 4